

Zeal, Zoology, and Natural Theology: John Fleming of Aberdeen and Edinburgh

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John Fleming (1785-1857) spent the last twelve years of his life as professor of natural science in New College, Edinburgh, having previously occupied for eleven years the chair of natural philosophy at King's College, Aberdeen.¹ In the prime of his intellectual life, however, when he had established the reputation that eventually brought those academic appointments, he had been a parish minister in central Scotland – for over twenty years in the small Fife parish of Flisk on the south shore of the Tay estuary. That he was a conscientious pastor may be accepted: certainly his brief incumbency in the more populous and demanding parish of Clackmannan earned him the affection of his parishioners. Yet from his earliest years as a student in Edinburgh he had responded to another vocation. The earliest surviving document in his hand is inscribed on the cover *Observations on Natural History 1803*. Fifty-four years later, shortly before his death, he had all but completed *The Lithology of Edinburgh*.

This, then, was a lifelong vocation. In pursuing it John Fleming had published two substantial books – *The Philosophy of Zoology* (1822) and *A History of British Animals* (1828). And the latter, though it ran to almost 600 pages, had been planned as only the first of at least two volumes. The continuation was never completed; and despite the intellectual leisure Fleming foresaw when he took up his Aberdeen appointment no work of major substance came from his pen during the last three decades of his life. Nor did he add substantially in those years

¹ For a recent brief account of Fleming's career see the *Oxford Dictionary of National Biography*. For fuller biographies see J. Duns in his edition of Fleming's *Lithology of Edinburgh* (Edinburgh, 1859), pp. i-civ; also A. Bryson, in *Transactions of the Royal Society of Edinburgh*, vol. xxii (1861), 655-80.

to the series of papers in which, besides recording his own observations, he had taken issue on major points of methodology with some of the leading naturalists of the day. This prompts inescapable questions as to the “zeal” referred to in my title.²

“Zeal” – not the most fashionable word in the early twenty-first century – was a favourite term with John Fleming. It occurs frequently in his letters; but more often than not the context is his rueful acknowledgement of his own *lack* of zeal for what he saw as the “favourite science” of many of his correspondents. That it was his own favourite is certain. So much so that when he first met Thomas Chalmers – they were ministers in neighbouring north Fife parishes in the years from 1810 to 1815 – Chalmers suspected Fleming (much to his subsequent indignation) of deficient zeal in the primary responsibilities of a parish minister. Despite Fleming’s rebuttal of the charge, it may be suspected that his priorities were those of the younger Chalmers rather than those of the Evangelical leader of later years. Chalmers, after all, as Stewart Brown has recently reminded us, had sat rather lightly to his pastoral responsibilities during his earlier years at Kilmany. Fleming, who had grieved his mother by abandoning the family’s “Old Light” rigour when he was ordained to the Church of Scotland ministry, might – like the unconverted Chalmers – have felt justified in devoting much of his time to “whatever scientific or scholarly interests he wished to pursue”.³ Nor did Fleming feel that, in his energetic cultivation of natural history, he was failing to discharge the intellectual responsibilities of his ministry, any more than he had neglected its pastoral duties. One may think, to be sure, that he was drawing a fairly long bow in seeking appointment to the St Andrews chair of church history in 1820. On the

² On Fleming’s Aberdeen years see J. H. Burns, “King’s College to New College: The Disruption of John Fleming”, *Aberdeen University Review*, vol. ix (2004), 324-34.

³ Cf. S. J. Brown, “Chalmers, Thomas”, in *Oxford DNB*. For Chalmers’s early comments see W. Hanna, *Memoirs of Thomas Chalmers* (Edinburgh, 1854), vol. i, 134, and cf. Duns, *Lithology of Edinburgh*, p. xi. Fleming’s response is reported by Bryson, “Memoir”, 659.

other hand, his attempt five years later to secure appointment to the chair of divinity there may not have been quite as outrageous as it appeared to Principal Robert Haldane, concerned to secure the appointment of "a man devoted to Theological Studies".⁴ Fleming was at least well aware of the increasingly urgent need to deal with the apparent conflict between religious belief – especially insofar as its grounding was in the Scriptures – and the rapidly advancing natural sciences.

That is a point to be considered more closely at a later stage. For the moment we must return to the problem of Fleming's scientific zeal – and more specifically his recurrent sense of deficiency in precisely that quality. The fact is that, as he neared the end of a second decade as minister of Flisk, Fleming – now in his mid-forties – was increasingly frustrated. Not only did he have two substantial books to his name – books valued and extensively used, for instance, by the young Charles Darwin and, a few years later, by the young Edward Forbes. He had also become known for the polemical vigour and skill he had displayed in two major scientific controversies. The first was the argument in earth history between "catastrophists" and "fluvialists". The second was his dispute with the "quinarian" naturalists for whom the entomologist William MacLeay spoke – in abusive terms that are not (one hopes) the natural reaction of the expatriate Scot to his stay-at-home compatriot. All this had earned Fleming both a hostile sobriquet as "the Zoological Ishmael" and the opinion – of William Buckland for one – that he ought, by the end of the 1820s, to have been appointed to a professorial chair. He had seen Robert Grant appointed, with his support, to the chair of zoology and comparative anatomy in the newly founded University of London. He had concluded that a Scots Presbyterian would have no hope of appointment to the geology chair in the rival King's College, only to see that appointment go to his friend Charles Lyell – a deist, but of course an Anglican deist.⁵

⁴ Haldane to Lord Melville April 1826, St Andrews University Library, MS 4060.

⁵ Cf. Fleming to F. W. Hope (1797-1842), Fleming-Hope letters, Library of the Oxford University Museum of Natural History.

Even someone less prone to paranoia than Fleming seems at times to have been might have felt that the dice were loaded against him – that he had been “cast by providence in a secluded situation, with a stinted income, and” (here perhaps the paranoia takes over) “exposed to the malevolence of those who fancied that I might interfere with their interests”. He had heard that, in the church, he was “*thought* heterodox”; and it will be necessary later to consider whether his attempt to reconcile Genesis and geology might have been so regarded.⁶ Yet one may also suspect that the interests supposedly interfered with were academic or intellectual rather than (or as well as) ecclesiastical. In March 1831 Fleming seems to have had wind of an academic appointment – perhaps, again, in St Andrews – that might come his way if appropriate representations were made to the Prime Minister, Lord Melbourne.⁷ It was “Jameson’s chair” in Edinburgh, however that – according to Buckland – Fleming “should have” occupied. Robert Jameson, professor of natural history since 1803 (when, indeed, he had introduced the eighteen-year-old Fleming to the scientific study of the subject), had long been viewed by his former student with increasingly grudging admiration and, in some respects, with mounting hostility. When Jameson’s opening lecture in the autumn session of 1831 seemed to ignore Fleming’s work by stating that “the field of British Zoology remained untouched”, Lyell (who heard the lecture with Fleming) could scarcely “believe that the Professor ‘had such a head and such a heart’”.⁸ That Jameson had blocked his former student’s academic advancement is at least plausible; that Fleming would need little persuading that this had happened is certain.

Disappointed and frustrated in his scientific ambitions, and saddened by the deeply felt death of his elder son, Fleming was understandably

⁶ Fleming to Patrick Neill, probably in the autumn of 1832: Duns, *Lithology of Edinburgh*, p. lxix.

⁷ Fleming to Hope (n. 5 above), 22 March 1831.

⁸ Fleming to Neill (n. 6 above): “This time last year I heard the Professor of Natural History in Edinburgh...” seems to refer to the autumn of 1831. For Jameson see D. R. Dean, in *Oxford DNB*.

eager to leave Flisk and find a new field for his ministerial labours. Yet here too there was disappointment. A strongly supported call to Auchtermuchty failed to secure patronal presentation – an experience that can only have strengthened Fleming's opinions on that crucial issue. Presented by Lord Dundas to Clackmannan in the late summer of 1832, he spent the next two years as an energetic and (it seems clear) greatly valued parish minister there.⁹ His career as a significant scientist must have seemed to be at an end, when – at last – in 1834 he was appointed to the chair of natural philosophy at King's College, Aberdeen. This hinge between the earlier and later phases of his long career is an appropriate point at which to pause and review Fleming's position in the scientific world of his day.

That position was, almost from the outset, a stance – a posture for conflict. Charles Lyell said of one of his friend's polemical encounters that it had delighted “those who, like true Englishmen, love to see a good fight”.¹⁰ Fleming had indeed been from the outset “a bonny fechter”. He had, posthumously, taken on James Hutton; and, though his own position in the argument over earth history came to be, in substance, far more Huttonian than the rival Wernerian doctrine he had learnt from Jameson, he never receded from the opinion that “Dr Hutton failed, in many instances, to reach the truth”. Playfair, had provided a “luminous exposition” of Hutton's “geological tenets”; but he “had never studied geology ... and appeared, therefore, as a *special pleader*”.¹¹ Those phrases were written a few months before Fleming's death, but they echo what he had said over forty years earlier and in harsher terms. Eminent scientists still alive in his own time – scientists moreover to whose work he owed an acknowledged debt – were castigated. Lamarck – or at least

⁹ *Fasti Ecclesiae Scoticanæ*, vol. v, 127 (Auchtermuchty); vol. iv, 302-3 (Clackmannan). For the support Fleming enjoyed at Auchtermuchty see Hamilton Bruce Papers, National Archives of Scotland, GD 152/117.

¹⁰ *Life, Letters and Journals of Sir Charles Lyell, Bart.* (London, 1881), vol. i, 259.

¹¹ *Lithology of Edinburgh*, 4.

Lamarckian *transformisme* – came to be seen as posing what has been called a “brutalizing threat”.¹²

Again, Georges Cuvier’s works were to be an indispensable source for Fleming’s 1822 *Philosophy of Zoology*. He had surely discussed with Chalmers, as they walked beside the Firth of Tay, Cuvier’s *Essay on the Theory of the Earth*, which Chalmers reviewed in 1814;¹³ and the two ministers doubtless shared the theological reservations that reverberate in Fleming’s own review of the 1822 edition. Fleming’s doubts, however, went beyond what might be regarded as metaphysical flourishes to matters nearer the heart of Cuvier’s work. “M. Cuvier”, he bluntly said in 1820, “cannot be regarded as an authority in geology. His theory of the earth abounds in errors.”¹⁴ Again, in his *Philosophy of Zoology*, he said that it was “truly surprising to find such an observer as M. Cuvier” making assertions “in the face of observations and his own experience”.¹⁵ On a broader front in the mid-1820s Fleming attacked not only Cuvier but also a more combative opponent – an attack culminating in his 1826 article on “The Geological Deluge, as interpreted by Baron Cuvier and Professor Buckland, inconsistent with the Testimony of Moses and the Phenomena of Nature”.¹⁶ This – perhaps the decisive moment in Fleming’s early career – is certainly crucial for my argument here.

Buckland has been seen as in some sense the presiding genius of “the English school of geology” in the years between the end of the Napoleonic wars and the middle of the century.¹⁷ The term “English” is

¹² A. Desmond, *The Politics of Evolution: Methodology, Morphology, and Reform in Radical London* (Chicago, 1989), 64-5.

¹³ *Edinburgh Christian Instructor*, vol. viii (1814), 261-73. Substantial extracts (“Remarks on Cuvier’s Theory of the Earth”) are in Chalmers, *Works* (1836-42), vol. xii, 347-72.

¹⁴ *Edinburgh Monthly Review*, vol. iv (July-Dec. 1820), 360-1. Fleming was then reviewing a book by George Greenough: his review of Cuvier’s *Essay* is in *New Edinburgh Review*, vol. iv (Jan.-Apr. 1822).

¹⁵ *The Philosophy of Zoology* (Edinburgh, 1822), vol. ii, 137.

¹⁶ *Edinburgh Philosophical Journal*, vol. xiv (Jan.-Apr. 1826), 205-39.

¹⁷ N. Rupke, *The great chain of history: William Buckland and the English school of geology, 1814-49* (Oxford, 1983).

used advisedly, to mark a distinction not only from continental Europe but also from Scotland. And it is indeed tempting to go further and invoke the authority of Gregory the Great according to the authors of *1066 and All That* : “Non Angli sed Anglicani”. James Secord has brilliantly evoked Buckland’s “sophisticated dovetailing of scientific findings with the literary evidence of the Bible ... based on impeccable reasoning from existing causes” and noted that this position won widespread support “in the moderate Church [of England] establishment, including most of the clerical geologists from Oxford and Cambridge”.¹⁸ What Fleming did – and claimed with some justice to have been the first to do – was to prise the dovetailed joints apart. The dismantling was done, moreover, on the basis of “the Testimony of Moses” as well as “the Phenomena of Nature”. A proper understanding of the scriptural evidence was as essential to Fleming’s argument as that “knowledge of the natural history of rocks” the lack of which (he had argued a dozen years earlier) had undermined the speculations of the deist James Hutton. Other issues in connection with “the Testimony of Moses”, however, were now more urgent.

Such issues, moreover, were now arising at less sophisticated levels than the pages of the *Edinburgh Philosophical Journal* and the meetings of the Geological Society of London. Fleming must surely have been aware of what was happening on the other side of the Tay estuary, in the presbytery of Forfar. There, in December 1827, when Fleming was writing the preface to his *History of British Animals*, James Headrick, minister of Dunnichen, was under Evangelical attack for a lecture in which he argued that “the Mosaic account of creation is perfectly consistent with the best ascertained facts concerning the mineral structure of our globe”.¹⁹

Fleming for his part was aware that the parallel sequences of “Geological Epochs” and “well-marked Zoological Epochs” expounded

¹⁸ J. A. Secord (ed.), *Charles Lyell: Principles of Geology* (Harmondsworth, 1997), xii.

¹⁹ See J. H. Burns, “Twilight of the Enlightenment: James Headrick (1759-1841)”, *Scottish Historical Review*, vol. xxi (2002), 186-211 at 208-7.

in the preface to his *History* clearly implied “that the revolutions which have taken place in the animal kingdom, have been produced by the changes which accompanied the successive depositions of the strata”. And he was also aware that it might be “supposed by some that the preceding statements are at variance with the generally received interpretation of the Creation, as given by Moses”. On the view he advocated there had been “[f]our successive creations and extinctions of animals and vegetables”; and “the present races of animals and vegetables, the companions of Man, did not exist on the globe during any of the antecedent epochs”. He went on to insist, however, that “the Sacred Historian” was to be “considered as referring to the earlier æras in the commencement of his narrative only, ‘*In the beginning*, God created the Heaven and the Earth’, and to have contemplated in what follows the creation of the animals and vegetables of the Modern Epoch”. Accordingly, “the most sincere friend of Revelation need be under no alarm, even should he be anxious to establish the authority of his Bible over a wider field than the Moral History of our race”.

Is there, conceivably, just the hint of a sneer in this? Does “*his* Bible” have a connotation different from “*the* Bible”? However that may be, Fleming goes on to point out that “the Word and the Works of God” necessarily “harmonize”. And he insists strikingly on the autonomy of science:

Are the Zoological and Geological Epochs established as true in science? If those who are qualified to judge shall pronounce in the affirmative, then must every interpretation of this brief portion of the sacred page, inconsistent therewith, be rejected as spurious, and the advocates of error, consigned to occupy a page in the History of Prejudice, along with the persecutors of Galileo.²⁰

It has been suggested – most recently in the *Oxford Dictionary of National Biography* – that Fleming had been “[e]ncouraged by Chalmers ... to reconcile then current geology with a belief in the truth of

²⁰ *History of British Animals* (Edinburgh, 1828), xvii-xviii.

scripture". Chalmers had indeed attempted in his 1814 review of Cuvier to reconcile "the theories of geologists and the Mosaical history of the creation". The two ministers must surely have discussed the matter then; but Chalmers had seen only the "speculations of geology" where Fleming, a dozen years later, saw affirmations by "those who are qualified to judge". What Chalmers called "speculations of geology" had for Fleming become principles by which "Zoological and Geological Epochs" could be determined. Those principles, moreover, were represented as possessing an independent authority overriding – not, to be sure, the authority of the Bible itself – but certainly such claims of scriptural exegesis as were at variance with what was "established as true in science". It may not be too difficult to understand why – as we have already seen – Fleming came to be "*thought* heterodox".

At this point I want to cast forward. Over twenty years after publishing his *History of British Animals*, Fleming delivered one of the "Introductory Lectures" at the 1850 inauguration of the New College building on the Mound in Edinburgh. He insisted yet again – in words echoing what he had written in 1827 – that "the works and the Word of God, when rightly interpreted, must harmonise".²¹ The principle, then, was unchanged; but the world of 1850 was not – either intellectually or ecclesiastically – the world of the 1820s. Fleming had been aware, during his Church of Scotland career, that his orthodoxy was suspect; and he soon encountered, in the Free Church to which he adhered from the outset in 1843, doubts as to whether the subject he was to teach had any place in a school of divinity. That subject was, in the event, designated as "natural science"; but – after a brief appearance as "natural history" – it took off, so to speak, during Fleming's feverish correspondence with Chalmers in the autumn of 1843, as "natural theology". And natural theology was the rubric under which the subject was deemed *inappropriate* for the new Free Church seminary by three out of thirteen presbyteries in 1845. This prompts consideration of the connotation and implications of the term at this period.

²¹ *Inauguration of the New College of the Free Church* (Edinburgh, 1851), 229.

A useful starting-point may be found in the institution of the Bridgewater Treatises of the mid-1830s, intended to exhibit the application of scientific evidence to illustrate God's 'power, wisdom, and goodness'. Both Chalmers and Buckland had published highly successful volumes in the series. Buckland's contribution – *Geology and Mineralogy considered with Reference to Natural Theology* – reflected a view that was "acceptable to a deistically inclined geologist like Lyell ..., as well as to a quite explicitly Christian geologist such as Adam Sedgwick".²² And if Lyell's uniformitarian theory of earth history was too much for someone like Sedgwick to swallow, it was, for Fleming, a view he claimed to have advocated *avant la lettre*. Chalmers, for his part, returned to theological teaching and reflection in what proved to be the last few years of his life, as primary professor of divinity at New College. In the *Institutes of Theology*, printed in the seventh and eighth volumes of his *Select Works*, he treats natural theology as part of the Prolegomena to the "Subject-Matter of Christianity". That, however, leaves open the question of the part to be played by natural *science*.

When Fleming put the case for his subject as an element in the new seminary's curriculum, Chalmers welcomed it as the basis for "a most useful Professorship – one of the Natural Sciences in subservience to Natural Theology".²³ Fleming might indeed have been less than happy with the notion of subservience. It would be going too far to say that he regarded the terms "natural theology" and "natural science" as interchangeable. Yet, in his first approach to Chalmers, in August 1843, he certainly presented them as alternative rubrics under which he could be "highly useful to the Institution" and of "considerable advantage to the Free Church". What he proposed was nothing less than a course extending throughout the three-year curriculum;²⁴ and Chalmers lost no time in pointing out how unrealistic that was. The scheme was

²² M. J. S. Rudwick, *The New Science of Geology: Studies in the Earth Sciences in the Age of Revolution* (Aldershot, 2004), II: "The Shape and Meaning of Earth History", 314.

²³ Chalmers to Fleming, 31 August 1843: Duns, *Lithology of Edinburgh*, p. lxxxvi.

²⁴ Duns, *Lithology of Edinburgh*, pp. lxxxiv-lxxxv.

immediately pruned to a one-year course, which was what Fleming eventually taught during his twelve years as New College's professor of natural science. Not that the claims of natural theology were forgotten. Chalmers, in his November 1845 address as Principal of New College, said that he was delighted "to observe in the advertisement of Dr Fleming's lectures on Natural Science, that its truths will be employed in the illustration of the Scriptures and the establishment of the first principles of natural theology".²⁵

Throughout these discussions another factor had to be considered. The world of natural history (and indeed a much wider area of mid-nineteenth-century culture) had been thrown into turmoil by the publication in 1844 of *Vestiges of the Natural Order of Creation* – anonymous, but later known to be the work of Robert Chambers. Recognised by Darwin as an alarming pre-emption of some of his essential positions, the book was widely seen as – in Nicolaas Rupke's words – "a case of crass materialism if not moral depravity, imported from abroad, possibly from Scotland, but alien to England".²⁶ Paul Baxter was surely correct when he argued that the problem posed by the book was one of the factors leading to the decision to establish the chair Fleming was to fill.²⁷ Fleming himself had declined an invitation to review *Vestiges*, and even by the late summer of 1845, when he was appointed to his New College chair, he still relied on extracts from Chambers's text when he argued, at the Inverness General Assembly, that ministers whose training had included the subject he was to profess would be better qualified to meet the challenge than any High Church Anglican indulging in anti-scientific polemics.²⁸

²⁵ Chalmers, *Posthumous Works*, vol. ix, 477.

²⁶ Rupke, *The Great Chain of History*, p. 177.

²⁷ P. Baxter, "Deism and Development: Disruptive Forces in Scottish Natural Theology", in S. J. Brown & M. Fry (eds.), *Scotland in the Age of the Disruption* (Edinburgh, 1993), 108.

²⁸ Fleming's address on this occasion was reported in *The Witness* on 30 August 1845.

Even so, Fleming's problems were not over. Was his course to be a required element in the curriculum, or merely an available option? Fleming himself, looking back a few years later, was quite clear "that compulsory attendance was contemplated from the first". "Had I", he went on, "anticipated the technical objections that were started a few months afterwards, I would not have become occupant of the chair, and made the sacrifice that was necessary."²⁹ It is not clear what "sacrifice" was involved, and one may doubt whether Fleming would have seriously considered withdrawal at that stage; but certainly both he and his subject were viewed with reserve during the early years of his Edinburgh career. Even a decade later, in 1856, there were doubts as to whether natural science should have a permanent place in the New College curriculum. Legislative change had by then removed the confessional obstacle to the appointment of Free Churchmen as professors in the University. Fleming's colleagues in logic and in moral philosophy had migrated to the corresponding posts in the Old College. He himself, for that matter, had hoped for appointment to the University chair of natural history when Jameson at last retired in 1853 – and again, a year or so later, following the premature death of Jameson's successor, Edward Forbes.

When, however, two or three years later, Fleming found that the availability of University natural-history teaching threatened the future of the New College post, he lost no time in raising the alarm and, with the support of Hugh Miller in the columns of *The Witness*, campaigning for the firm establishment of the chair and the subject there. One result was the decision by a group of prominent Free Church laymen, including the President and eleven Fellows of the Royal Society of Edinburgh, to seek the "permanence and, if possible, endowment" of the chair.³⁰ The reference, in their public statement, to the importance of the subject "especially in the present day" surely reflects the continuing tensions between science and religion that were to explode, as it were, in the reaction to Darwin's *Origin of Species* in 1859.

²⁹ *Inauguration of the New College of the Free Church*, 220 n.

³⁰ Duns, *Lithology of Edinburgh*, pp. xcii-xciii.

Before turning briefly, in the last part of this paper, to another public aspect of Fleming's career, I want to underline the importance of his work as a *teacher*. The subject he taught in Aberdeen was not his forte, and it is difficult to assess the importance of his teaching there. In Edinburgh, however, he taught – to a syllabus of his own devising – the subject to which he had been devoted throughout his life; and he taught students who were themselves, as ministers, to exercise a teaching as well as a preaching function in places throughout Scotland. How much of what he taught was carried forward in that way by his former students we cannot tell and I must not hypothetically exaggerate the point. Yet it is not, I suggest, a factor to be ignored in an assessment of Fleming's influence.

It may be easier to evaluate that influence in the context to which I now turn. Quite early in his Edinburgh career Fleming became concerned about "the Defective State of the Public Museums of Edinburgh". In alliance with Hugh Miller, he used as a forum the Royal Physical Society, which he had been instrumental in awakening from its torpor. The eventual establishment of the Royal Scottish Museum (which Fleming did not live to see) was, of course, the product of a combination of forces that had to overcome a variety of obstacles, both academic and municipal. Fleming's reservations in regard to the University's collections, splendidly housed in the room designed by William Playfair, may have been unjust. His proposal for a museum building almost in the shadow of New College, near what are now the National Galleries, was no more successful than his caustically expressed proposal to accommodate the collections in Holyrood House. It is not, incidentally, clear whether his suggestion that this would be "more becoming the Scottish nation than the beings who at present are tenants of its walls" is directed at the "grace and favour" tenants of rooms in the palace, or at the "Abbey Lairds" – the debtors who took advantage of the Holyrood "sanctuary". In any case there is no doubt that Fleming's was "[a] powerful voice ... raised for the establishment of a national museum". Having raised the subject as early as 1849, he played an important part at the November 1851 meeting held under the auspices of the Highland

Society, marking the effective launch of a public campaign of which the success was crowned when Prince Albert opened the building in Chambers Street ten years later.³¹ There is a fitting justice in the fact that Fleming's earliest known writing – the notebook mentioned here at the outset – is now preserved in the Museum's library.

"On Tuesday the 17th November, 1857", Alexander Bryson wrote in his memoir, published in 1861, Fleming "had lectured to his class with his usual vigour, and talked to his friends with a light-heartedness which to them did not presage any sudden change." Less than a day later he died of peritonitis. On the 24th, he was buried in the Dean Cemetery: "all the students of New College," we are told, were present.³² If it was a typical Edinburgh day for the time of year, the cold and damp must have reminded them of shivering geological expeditions with their late professor in the surrounding hills. This was not an occasion to challenge comparison with the obsequies of Thomas Chalmers or – much more recently – of Hugh Miller; but it was nevertheless a moment with its own significance. Did it, for one thing – and I put the question with some diffidence – mark a stage in the decline of the more ambitious aims some at least of the founders of New College had in mind in the mid-1840s? Certainly the teaching of natural science in the College was to continue, and a handsome bequest by Thomas Elder in 1869 ensured the funding of the subject and John Duns's lifelong position as professor: he died, still in that post, aged almost ninety, in 1909. On the other hand (as Donald Withrington argued a dozen years ago), by the mid-1850s, "all hope of persuading the Church to expand [New] College into a Free Church university had effectively gone".³³ And in the intellectual world of the

³¹ See generally on this subject C. D. Waterston, *Collections in Context* (Edinburgh, 1997), esp. chap. 4; and, for Fleming's views together with those of Hugh Miller, cf. *Proposal to establish a Museum of the Natural Productions of Scotland* (Edinburgh, 1849).

³² Bryson, "Memoir", 674.

³³ D. J. Withrington, "Adrift among the Reefs of Conflicting Ideals? Education and the Free Church, 1843-55", in Brown & Fry (eds.), *Scotland in the Age of Disruption*, 91.

late nineteenth and early twentieth centuries it must have been increasingly difficult to sustain natural science, with a single professor in what was essentially a single-faculty structure, even in a purely instructional form. Duns, for his part, published extensively on the relationship between science and religion;³⁴ but it seems fair to say that his work has not left a lasting impression in that vexed debate.

There is also – and finally – a broader perspective to be considered as we review John Fleming's long career from the standpoint of the late 1850s. One cannot, to be sure, cast Fleming as the last of the clerical luminaries of natural history. Buckland had indeed died in 1856; but Henslow outlived him by five years, while Sedgwick survived until 1873. I cite these names because Lyell was already complaining in the mid-1840s that all three had, on gaining ecclesiastical preferment, lost their "usefulness" to science. "Say," he urged Fleming a decade later, "that I was in some degree a prophet rather than a bigot."³⁵ The precise context of the remark – the reason for Fleming's query, to which Lyell was responding – remains somewhat obscure. It may be, however, that Fleming was uneasily aware of increasing difficulty in maintaining such a position. One might adopt and adapt a metaphor that is, in another connection, prominent in Fleming's correspondence at this period. He writes of a situation in which one has "only one leg to stand on". Now he, for his part, had stood throughout his long career with one foot securely planted in each of two firm footholds – one in Christian belief and scriptural theology, the other in the science of nature. Might he now have been experiencing the discomfort of finding (or at least suspecting) that this was to have one foot in each of two opposing and perhaps incompatible positions – to seek, indeed, to serve two irreconcilable masters?

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³⁴ As it happened, his article on "Genesis and Science" was published in the *North British Review* in the year of Fleming's death. The two volumes of his *Biblical Natural Science* appeared in 1863 and 1868, *Science and Christian Thought* in 1866.

³⁵ Lyell to Fleming, 6 February 1856: *Life, Letters, and Journals*, vol. ii, 208. Lyell's strictures had been expressed in his 1845 *Travels in North America*.

1. The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present and for the development of a sound policy for the future. The author points out that the study of history is not only a means of satisfying a natural curiosity about the past, but also a means of training the mind in the habits of logical thought and of learning from the mistakes of others.

2. The second part of the paper discusses the various methods of studying history. It is pointed out that there are two main methods: the traditional method, which is based on the study of written records, and the modern method, which is based on the study of material remains. The author argues that the traditional method is more reliable than the modern method, but that the modern method is more interesting and more useful in the present day.

3. The third part of the paper discusses the various sources of historical information. It is pointed out that there are many different sources, including books, newspapers, magazines, and the Internet. The author argues that the most reliable sources are those that are based on primary sources, such as letters, diaries, and official documents. The author also points out that the Internet is a very useful source of information, but that it is also very unreliable, and that it is important to be careful when using it.

4. The fourth part of the paper discusses the various uses of history. It is pointed out that history can be used in many different ways, including to educate the young, to entertain, and to provide a basis for policy-making. The author argues that the most important use of history is to provide a basis for policy-making, and that it is important to have a good knowledge of the past in order to make good decisions about the future.

5. The fifth part of the paper discusses the various problems of the study of history. It is pointed out that there are many different problems, including the problem of the reliability of sources, the problem of the interpretation of sources, and the problem of the selection of sources. The author argues that the most important problem is the problem of the reliability of sources, and that it is important to be careful when using sources that are not based on primary sources.